October 21, 1996

Dear Friends:

I was saddened to learn that Howard Mason passed away on June 26, 1996 at age 95. [See Keyletter #11, page 114] I last saw him early in the year, and he was not doing well. He was a true radio pioneer, and it was a privilege to have known him.

I recently acquired a pair of British practice marked "BUZZER SIG. TRAINING 8350-99-446-4165" and are nearly identical to figure 82 in AWA #8. The differences being the number listed above and the fact that mine has the design 2, variation C, key shown in figure 93 of AWA #8. In his article Louis Muelstee states that the one in figure 82 has a metal arm. Mine is phenolic. Is this yet another variation of the ubiquitous 8 amp key? Both of mine are in mint shape, so they must have been stored away for a while.

Tom French sent a note about the "ball bearing" chromed Mac stream key that I mentioned in Keyletter #17 on page 178. He referred me to page 119 of his McElroy book which states in the section on the Stream Key (Second Model) "There are many varieties of this model. The metal base of the #200 was briefly replaced with grey or black plastic (your choice), as was that of the #100 (black plastic only). At this time the #200 had a circuit closer while the #100 did not. The following year the #200 returned to a metal, black wrinkle finished base, and two variations were added to the #300 and #200 lines. The "BB" models have a single ball (a bearing) captive between the lever and each pivot screw. The "BS" models have bronze pivot screws.

BUZZA PRODUCTS BUG. I recently acquired a second Buzza Products bug. The label on this one reads:

AUTOMATIC KEY NO. 100
MADE IN AUSTRALIA
BUZZA PRODUCTS

This one looks similar to the Lightning Bug since it has a triangular plate for the pivots. Upon close examination I found that it can be classed as a dual lever since it has a separate set of pivots for the dash lever. My other Buzza bug has an identical label and is also marked "No 100", but is an entirely different key. See the drawing on page 63 of Keyletter #6. If anyone else has a Buzza bug I would appreciate information on it.

Leg Iron Key: My appeal for information on leg iron keys in the last Keyletter didn't yield anything, and in the meantime I found an interesting variation, a J-45 leg Iron key that snaps into a machined base for desktop use. The base is a real work of art. It is 3" X 6" and has slots milled into the top so the key can be snapped into it in the folded position. The base is done in very nice black crackle. Judging by the machine work, the taxpayers paid a bundle for it!

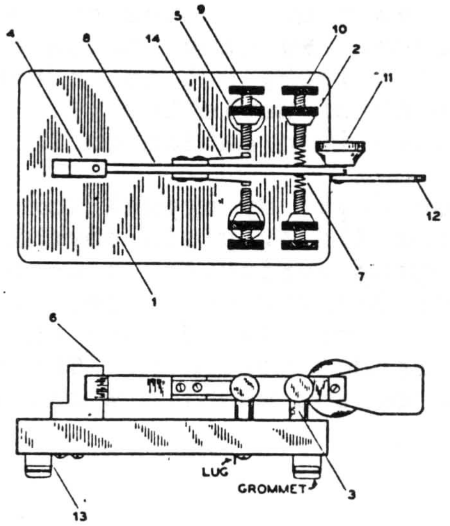
E-Mail addresses: Please note that my new e-mail address is "n7cfo@msn.com" The old "keys@scn.org" address automatically forwards to my new account, so it is good also. John Rehak's new e-mail address is "jrehak@starlink.com". Tony Smith is back up on e-mail at "tony@morsum.demon.co.uk". Morsum Magnificat now has a home page at "http://www.retiarius.com/morsum". Ed Trump's new address is "ltrump@alascom.att.com".

KEYERS, CONTINUED. I have been working on a rather hit and miss series on keying. These pieces have not been in any particular order. It seems like I am always finding new information, so it is difficult to plan ahead! My last was on the Duomatic keys made by F.A. (Bart) Bartlett in Keyletter #14. Bart started tinkering with keying back in the 1930's. The patent for his design was issued in March, 1948. Coincidentally, the March, 1948 CQ magazine has an article by Richard G. Talpey, W2PUD, entitled "How are Your Dots?". This article describes a keyer with the following "desirables":

1. Key arm and base at ground potential.
2. Speed continuously adjustable by a single knob during operation.
3. Dot length always equal to space regardless of speed.
4. No critical adjustments.
5. Simplicity of key and circuit.

The article states "The circuit used is a cathode coupled multivibrator. The dots are made by the multivibrator and the dashes are made manually. The cathodes of both tubes (two sections of a double triode) float above ground until the key is pressed. When the cathode circuit is grounded, tube V1 conducts and the relay closes. After a period of time determined by the circuit time constants the relay opens. The cathode coupled multivibrator is in essence an cathode follower, driven by a triode amplifier. The common cathode resistor provides a large amount of feedback, causing the circuit to oscillate and alternately drive each tube to saturation. The flow of plate current interchanges between the tubes.... Dashes are formed manually as with a regular bug, by means of the left contact of the key, which places the relay in series with a limiting resistor across the power supply."

This article has a nice photograph of the key used with the keyer, and it appears to be the first of its type. As can be seen by the attached drawing, it could be easily used with a modern keyer. Talpey goes on to provide construction details for the key. In a footnote he states "Actual construction can be further simplified by substituting wherever possible automatic key replacement parts available from most



KEY ASSEMBLY

manufacturers of bugs. Les Logan Co., a division of E.F. Johnson Co., and The Vibroplex Company both have available a complete assortment of all automatic key components." This last sentence is interesting. I doubt if Logan actually was part of the Johnson company. This was about the time that Logan sold out to Johnson, so the confusion is understandable.

Pat Person, K7YIR, provided me with a copy of an article from the June, 1947 CQ entitled "The DADIT". This article was written by C. F. Bane, W6WB. The Dadit used a bug to provide the "dits" and the "dahs" were produced by a high resistance relay and a time delay capacitor. The prototype Dadit was constructed in a sloping front meter case and included a built in monitor. This was a home-brew article, and the Dadit never went into production.

I had previously talked to Mr. Bane when I was researching the Les Logan Company, so I called him, and we had quite an interesting conversation. At age 89 he is still living at the same address in San Francisco that he was living at when the Dadit article was written. Bane is a real wireless pioneer and has been licensed as an amateur since 1920. He edited Radio magazine, and was later a feature article writer for CQ. During WW II he owned the Tech-Rad company and manufactured the T350XM transmitter.

The next keyer that I can find referenced is in the October, 1950 issue of CQ. This is far from an electronic keyer since it is nothing more than a re-hash of the code wheel. The article, by a M.E. Heihle, of Culver City, CA (no ham call provided) explains in great detail how the builder used a notched wheel with microswitches to build his keyer: "Not content with just a plain CQer, this machine has stops and is adjusted to sign off the call, and to reset for the next call. The disk is made of 3/16 aluminum and is 10 1/2 inches in diameter. Keying contact is made by riding the spring leaf of a microswitch directly on the notched disk. This method of indirect contact prevents burning or arcing on the wheel. Further, the microswitch allow considerable power to be controlled."

The article goes on [I really enjoyed this] to state "Perfect code is made up of fundamental time units called bauds, which are as follows:

a dot = 1 baud
a dash = 3 bauds
space between dots and dashes of one letter = 1 baud
space between letters = 3 bauds
space between words = 5 bauds

He provides formulas for calculating the diameter of the disk after determining the number of desired bauds. He then laid out the disk and cut 1/8" notches with a jig saw. I think that Mr. Heihle had time on his hands... Come to think of it, this could be considered an early version of a "hard disk", though capacity was limited.

In the November, 1950 issue of CQ Stephan Leibholz, W2ZDE describes a "Low Cost Vacuum Keyer". This device seems to be designed to eliminate key clicks. This circuit uses a single 6L6 tube. There are no pictures or illustrations of the actual keyer.

The November, 1950 QST has an article by G. Franklin Montgomery, W3FQB, entitled "Corkey - A Tubeless Automatic Key". This article is well footnoted and confirms my statement [Keyletter #11, page 115] that Harry Beecher's April, 1940 article in QST was the first on electronic keying. The Corkey is a simple tubeless circuit with self completing dots and a single speed control that preserves dot/dash and dot/space ratios. He also has a diagram for a simple key lever. The name "Corkey" is an abbreviation of "Condenser-operated relay key".

A footnote in the Corkey article referred me back to "Hints and Kinks" in the April, 1946 QST where Mr. Harris Adams of Merced, California described "An Electrostatic Key". This is another tubeless circuit and he recommends that the parts be mounted on the base of a regular bug "reconstructed for the purpose". The circuit has two relays, one for dots and dashes and the other for spaces.

In the March, 1951 issue of CQ Montgomery followed up his Corkey article with a simpler circuit with fewer parts.

Letters, we get letters:

Paul Bock: *For those with a need to re-plate key parts, the following company can supply you with about everything you need for plating small items in copper, nickel, silver, or gold:*

Texas Platers Supply
2453 W. Five-Mile Parkway
Dallas, TX 75233
(214) 330-7168

The nickel-plating set is $12 postpaid and will do "3 handguns" (or a whole passel of bug parts). It includes copper and nickel plating compounds, two clips w/leads, and a plating brush.

Remember that even with brass parts you will have to plate with copper first, then plate with nickel, for best durability. Full instructions are included with tips on cleaning, polishing, satin finishing, etc. All you need is 3 - 4.5 vdc (small DC supply, or 2-3 #6 dry cells in series).

The silver and gold sets are more expensive. They can also supply replacement jars of plating compound if you run out, so you don't have to re-order the entire kit.

NOTE: They do not supply chrome plating kits, as chrome plating is (apparently) a different process.

Here are some comments on plating based on my personal experience:

a) In preparing items for plating, it is important to remember that *the "shininess" of the finish after plating is directly related to the "shininess" of the item before plating. In other words, electroplating does NOT "fill in" little flaws in the surface and make it all look nice and smooth, it follows the surface contours. If you have a satiny, scratchy-looking brass surface you will have a satiny, scratchy-looking nickel surface after plating (with a satiny, scratchy-looking copper surface in between).*

b) The worst enemy of a homogeneous plating job is foreign material on the metal being plated, and in my experience the biggest culprit is FINGER OILS! No matter how many times you wash your hands, you still can't avoid it if you handle the pieces before plating.

c) Failure to rinse plated pieces IMMEDIATELY after plating is a definite no-no. The chemical residue will &#! up the finish in minutes, and you'll have to start all over.*

Here's a procedure I've used for plating which works well:

1. Use a buffing wheel for the final polishing. If you must do it by hand without a buffing wheel (which costs less than $10, BTW) use #400 & #600 emery paper, 0000 steel wool and crocus cloth to polish the pieces as well as you can.

2. Clean off the piece(s) with isopropyl alcohol, using Q-tips and/or clean cloth to remove all residue, etc., from the entire piece including all the nooks, crannies, screw holes, etc.

3. Put the piece(s) in a stainless-steel saucepan, fully submersed in clean water (distilled is best, but not vital unless your water has a LOT of trash in it), and boil them for 10 minutes - and I do mean BOIL.

4. Put on rubber surgical gloves. A whole box of them at a drugstore costs a few dollars, and they're great for protecting your hands while paint-stripping or de-rusting, not to mention keeping finger oil off of items to be plated.

5. Pour the pieces out into an ordinary wire kitchen strainer and allow them to cool. When cool, dump them onto a clean paper towel and dry them thoroughly (whilst wearing the gloves, remember?) and then transport them to the plating bench. DO NOT TOUCH THEM UNLESS YOU'RE WEARING THE GLOVES!

6. Place a container of clean water (I use a large, cleaned-out coffee can) at your plating bench; also ensure that you have several clean drying rags handy (old T-shirts or pieces of turkish towel work nicely).

7. Commence plating. As you finish each piece, rinse it in the clean water container, dry it off, and set it aside on a clean paper towel. Dry your hands carefully and move on to the next piece. The process is slow, but works nicely. For the record, I use 3.5 vdc from a small, short-circuit proof adjustable DC supply.

Here is an excellent source for Vibroplex style knurled screws. They are not an exact match, but they are close:

Small Parts, Inc.
13980 N.W. 58th Court
P.O. Box 4650
Miami Lakes, FL 33014-0650
Tel: 1-800-220-4242 FAX: 1-800-423-9009

Their catalog is free; just call and ask for it. They have a $15 minimum order, and no shipping charges in 48 states. Personal checks accepted and they ship without waiting for them to clear.

1. Knurled nuts: Nickel-plated, open-end, same approximate shape & style as used on the binding posts of older Vibroplex bugs (slightly taller, knurling is straight vertical vs diamond on the original Vibroplex parts). Available in several sizes including 8-32. 8-32: p/n A-TNB-832 $2.70/10, $6.17/25, $23.54/100.

2. Knurled thumbscrews: Nickel-plated, close approximation to the weight thumbscrew used on Vibroplex No. 6/Lightning Bug, Champion, and Zephyr. Available in several sizes including 8-32. 8-32: p/n A-TSB-832-6 (for 3/8" length as used on Vibroplex), $7.59/10, $17.29/25, $65.78/100.

They also sell brass shim stock in single sheets, in thicknesses up to 0.020", and gray "fish paper" insulation stock in thicknesses up to 0.030". These items can be used to create acceptable substitutes for the contact & insulator strips used on Vibroplex bugs; in fact, using the plating kit from Texas Plating Supply, the brass strips can be nickel-plated to approximate the older tin-plated ones (new Original Standards use unplated brass). Both are thinner than the original parts but are acceptable substitutes.

Thicker brass shim stock can be obtained from Nolan Supply [P.O. Box 6289, 111-115 Leo Avenue, Syracuse, NY 13217] but it's only available in packages of sheets (kinda expensive if you don't need much) or in rolls. Nolan also sells cold-rolled steel plate in various thicknesses & widths, cut to whatever length is requested. For the 1/2" thick stock, they have 2.5" (Blue Racer) width, 3" (Junior/Zephyr), and 3.5" (all other Vibroplex) width, to name a few. I just bought two pieces of 1/2" thick stock, 3" wide, cut to 6" length, and since they bandsaw-cut they actually supplied me with two 6.125" long pieces. Cost me about $7.50 for both (which is the price per foot for that particular thickness & width combination). Needs dressing on the cut end (that's why they supply it a bit long) but the top, bottom, and other three sides are very nice and need only steel-wooling prior to painting (or a good polishing if they're to be nickel or chrome plated). So, it's a good source for replacement/repro bases.

Dave Pennes: *Just got back from a car trip to Michigan and went to the Henry Ford Museum which has a large display of telegraph stuff, much of which was donated by Thomas Edison, and many of which were*

> *Edison inventions, in the landline department. Also on display were a number of bugs including a really odd 73 bug which did NOT have the flip top, but was sort of like a smaller version of a Vibroplex.*
>
> *Many items were mis-labeled, such as a Vibroplex Model X which had some oddball description. A quadroplex set was mis-labeled as being used to send two [should be four!] messages simultaneously. The lighting was really poor, and if you visit this place, I recommend taking a good flashlight. They were refurbishing part of the museum, so the dim lighting might be temporary. Lots of early landline stuff on display like registers, etc. Highly recommended.*

Dave, a AAA cell Mini-Maglight has a permanent place in my shirt pocket for situations like this. It is handy for probing the darkest corners of junk stores. I am interested in the 73 bug for my post 1900 key list. Does anyone have any information or literature about such a variation? Maybe we should start naming these oddities after the person that discovers them like they do comets - we could call this one the "Pennes Variation"!

> **Larry Nutting:** *I would like to hear from others who have seen any military keys made by Western Electric. The only ones I have documented so far are the J-5-A and the one in the Model P 1917 Buzzerphone. Please note that I now have a new call sign: K7KSW. Actually it is my old original call sign that I accidently let expire. My home e-mail address is larryn@sonic.net*
>
> *I forgot to respond to one other item in your last keyletter. In addition to some replica keys, I have also seen a few fantasy keys, and unfortunately own two of these. Fantasy keys are keys that have been intentionally modified to pretend to be something that they are not. The most common type of modification is to add a manufacturer's name, model number, etc. to an unmarked key. Desirable names such as Marconi, Clapp-Eastham, Wireless Specialty Co., etc are engraved onto keys that were never manufactured by those companies. Other times a key is given a bogus military nomenclature.*

Larry, several years ago a gentleman from the local area asked to see my collection. During our conversation he mentioned that he owned an "Albright Vibroplex" that he had bought from a person that was widely advertising vintage keys by mail order at the time. I asked him to bring it when he visited, and it was quite a piece. It was a nicely set up key and appeared to consist mainly of modern Vibroplex parts, though there were a number of subtle variations. The real kicker was a trophy store stick-on brass plate that said something like "Vibroplex, J.E. Albright". It was sure as hell a key that said "Albright" on it, but it was far from being an Albright Vibroplex. Interestingly enough, it was a nicely made key and altogether pleasing in appearance. My friend Jim Aguirre had negotiated with the same seller over a "Vertical Vibroplex" and wisely did not buy it after the gentleman refused to send a photo or offer any sort of guarantee on the sale.

One of the guys, I think it was Tony Rogozinski, reported finding a "Robot Radio Key", and I promised to publish a copy of an advertisement in the next Keyletter. The Gardiner-Levering Company of Haddon Heights, New Jersey advertised from November, 1936 until April of 1942. In February, 1944 "Gardiner & Co." of Stratford, New Jersey started advertising various products and did so through September of 1965. Haddon Heights and Stratford are in close proximity, so it is likely that the two companies had some relation. The only reference that I was able to find on the Robot Radio Key was the attached ad in the November, 1936 QST.

The drawings of "The Fry open Circuit Dry Battery Telegraph Key" and "Bunnell Double-Speed Key" on page 193 are from the book "Telegraph Codes" published by the International Textbook Company in 1928.

Larry Monroe sent the drawings of the Van Deusen's and Kohrn's telegraph keys. Take a close look at the Van Deusen key - at first glance it looks like a standard Victor key, but there us a big difference! Has anybody seen either of these keys?

Please keep those cards and letters coming. The volume of correspondence I receive directly relates to how long it takes to fill up ten pages for a Keyletter. Many thanks to Paul Bock for his input on plating and parts sources in this issue. I have ordered a plating kit and will report on how it worked in the next edition.

73 de Lynn, N7CFO

Oct. 25 1890

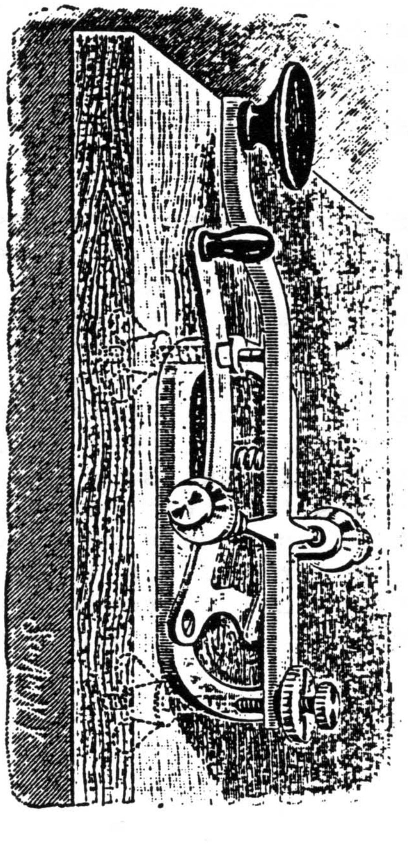
Sci-Amer PG-265

IMPROVED TELEGRAPH KEY.

We give an engraving of an improved telegraph key recently patented by Mr. Wm. A. J. Kohrn, of 83 Franklin Street, San Francisco.

This improvement accomplishes two important results. First, the perfect closing of the circuit when the switch is turned; and second, the protection of the platinum points from the accumulation of dust and dirt. The improvement consists mainly in a spring attached to the under side of the rear end of the key, and a beveled arm projecting from the switch inwardly toward the center of the key frame in position to engage the spring as the switch is closed, thus forcing upward the rear end of the key, and causing the contact point carried by the key lever to touch the anvil contact, and to hold the parts in this position until the switch is again opened, when the usual retractile spring attached to the key opens the circuit. Besides closing the circuit through the contact points, it also closes the circuit by the contact of the switch with the anvil tongue.

It will thus be seen that there are two chances of securing a good closure of the circuit, one through the usual switch contact, the other through the points of the key. It will also be seen that as the platinum points of the key are held in contact so long as the key is closed, no dust can enter, and the surfaces will remain clean.



KOHRN'S TELEGRAPH KEY.

14. Bunnell Double-Speed Key.—In Fig. 3 is shown a double-speed legless key made by Bunnell & Company. The key is operated by a sidewise rocking motion of the lever, which it is claimed does not produce cramp of the hand. Two contact points are provided at the ends of the adjusting screws *a* and *b*. The spring *c* offers resistance to side motion of the lever, and its tension may be adjusted by moving the clamping block shown at the end of the spring. The block is locked in position by the screw *d*. The circuit-breaker is shown at *e*; one terminal of the key, at *f*; and the other, at the top of the lever block. The contact points should be adjusted close together with the key lever normally midway between them, but not touching either. When operating, the lever makes contact in either direction, no two successive contacts being made on the same side. For example, if the dash of the letter D is made to the right, the first dot is made to the left, and the second dot to the right.

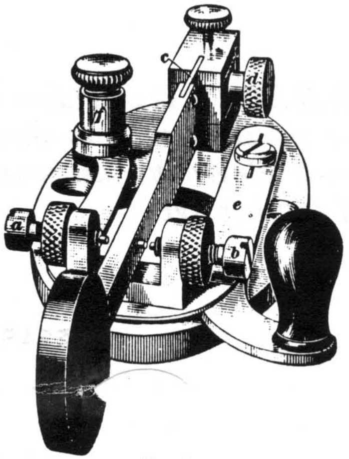


FIG. 3

15. Open-Circuit Dry-Battery Telegraph Key.—Mr. U. J. Fry has devised a key to be used in telegraph circuits operated by dry batteries, which are being used in place of gravity cells by some railroads. In such a circuit, the dry batteries must be left on open circuit when not being used to send signals, but the line circuit containing the relay must at the same time be closed so as to be able to receive signals.

he connections are shown in Fig. 4 (*a*), and a view of the key and its connections in (*b*). In order to use the key devised by Mr. Fry, the operators do not have to learn anything new. The movement for throwing open the circuit-closer on the Fry key is the same as for the ordinary key, this movement connecting the battery in series with the line and relay, that is, in a position to transmit signals. The reverse movement, or the closing of the circuit closer, puts the home dry battery on open circuit but leaves the relay in series with the line, that is, in position to receive signals. When the circuit switch is in closed position, the battery circuit cannot be closed by pressing down he key lever, hence there is no danger of wasting the battery by a book or other heavy article resting on the key knob. It is claimed that reliable dry cells are so much cheaper than gravity cells that exhausted ones can be thrown away and replaced by new ones at less expense than for attending and renewing gravity cells. Enough cells must be used, however, at each station to operate the whole line.

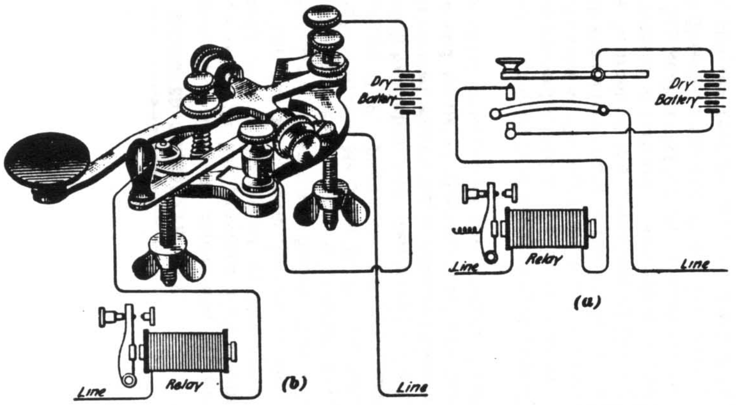
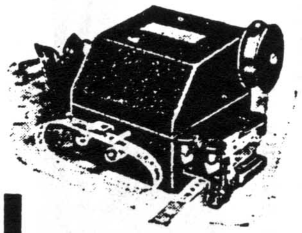


FIG. 4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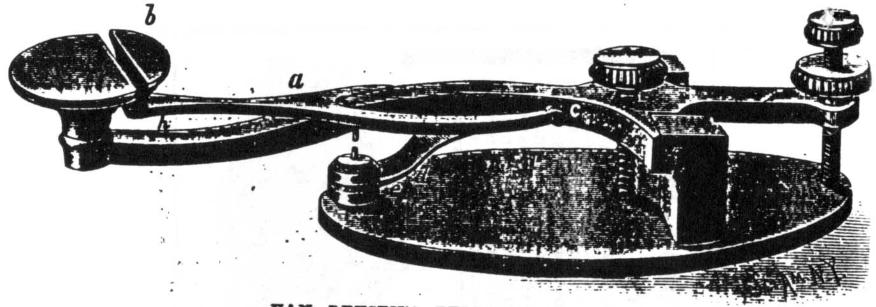
The N7CFO KEYLETTER is a seldom regular publication devoted exclusively to sharing information about telegraphy instruments and the lore of another age.

SCIENTIFIC AMERICAN
Sept. 6
1890
PG 146

AN IMPROVED TELEGRAPH KEY.

The accompanying illustration represents, in perspective view, a telegraph key provided with means for automatically closing the circuit as the operator releases the key, and for opening the circuit when the key is grasped by the thumb and finger. The cut shows the attachment as applied to a "Victor" key. It is a patented invention of Mr. John B. Van Deusen, of Saratoga Springs, N. Y. The key is of the ordinary construction, with base plate and standards in which the key lever is pivoted, while a leg, *e*, passing through the base plate and insulated therefrom, is provided with an anvil contact for opposing the contact of the key lever.

Under the head of the leg is a flat spring, *d*, curved rearwardly and upwardly, and slit at the ends to form arms at opposite sides of the key lever, a central arm contacting with the under surface of the key lever. A short distance in front of the trunnions of the key lever at *c* is pivoted a forwardly extending forked lever, *a*. The key knob is divided, its forward portion being attached directly to the end of the key lever in the usual way, and the rear portion, *b*, attached to the forward end of the forked lever, each arm of which has a strip of insulating material resting on the side arms of the springs on each side of the key lever. The key is operated in the same way as an ordinary key, the circuit being opened and closed at the anvil contact points, but when the operator releases the key the forked lever is automatically lifted by the spring, as shown in the illustration, and the circuit is closed, a matter which the operator, through neglect or otherwise, often fails to attend to.



VAN DEUSEN'S TELEGRAPH KEY.